Test Report

Product Name	Eee Stick
Model No.	GMC-1, GMC-1(M)
FCC ID	MSQGMC-1M

Applicant	ASUSTeK COMPUTER INC.
Address	4FL., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Date of Receipt	May 16, 2008
Issued Date	June 10, 2008
Report No.	085260R-RFUSP07V01
Version	V1.0

Test Report Certification

Issued Date: June 10, 2008

Report No.: 085260R-RFUSP07V01

Product Name	Eee Stick
Applicant	ASUSTeK COMPUTER INC.
Address	4FL., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	ASKEY COMPUTER CORP
Model No.	GMC-1, GMC-1(M)
Rated Voltage	DC 3V(Power by battery)
Working Voltage	DC 3V(Power by battery)
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003 NVLAP Lab Code: 200533-0
Test Result	Complied

Test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : Rita Huang

(Engineering Adm. Specialist / Rita Huang)

Tested By : Dino Chen

(Engineer / Dino Chen)

Approved By :

(Deputy Manager / Vincent Lin)

Testing Laboratory 0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Eee Stick
Trade Name	ASUS
Model No.	GMC-1, GMC-1(M)
FCC ID	MSQGMC-1M
Frequency Range	2402~2478MHz
Channel Control	Auto
Channel Separation	37MHz
Antenna Gain	Refer to the table “Antenna List”
Channel Number	3
Type of Modulation	GFSK
Antenna Type	Chip

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	COXOC	920D07E15XX5013	2.6dBi in 2.4 GHz

Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2402 MHz	Channel 02:	2441 MHz	Channel 03:	2478 MHz

Note:

1. The EUT is a Eee Stick with a built-in 2.4GHz transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
4. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249 for spread spectrum devices.
5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operational Description

The EUT is 2.4GHz Eee Stick built-in 2.4GHz transceiver. The operation frequency is from 2402 MHz to 2478MHz with GFSK modulation. The signal will be transmitted through 2.4 GHz RF signal from the Chip antenna. DC 3V shall be provided for EUT operation.

Test Mode	Mode 1: Transmitter

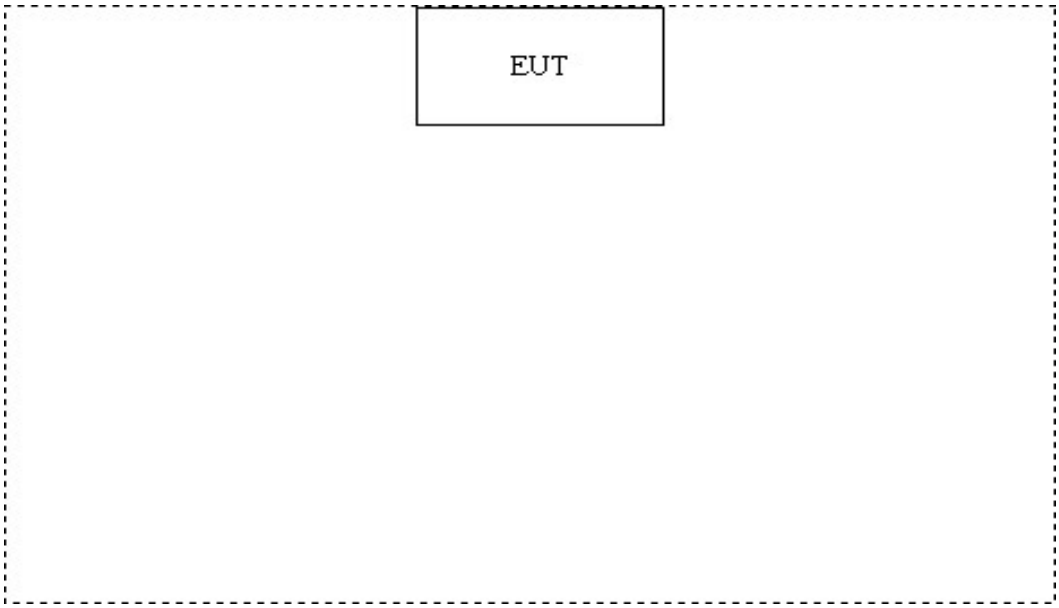
1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	N/A	N/A	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	N/A	N/A

1.4. Configuration of Test System



1.5. EUT Exercise Software

1	Setup the EUT as shown on 1.4.
2	Turn on the power for EUT.
3	The EUT to enter RF test mode.
4	The EUT will continuously receiver the radio signal.
5	Repeat the above procedure (3) to (4)

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://tw.quietek.com/modules/myalbum/
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

Testing Laboratory
0914

2. Radiated Emission

2.1. Test Equipment

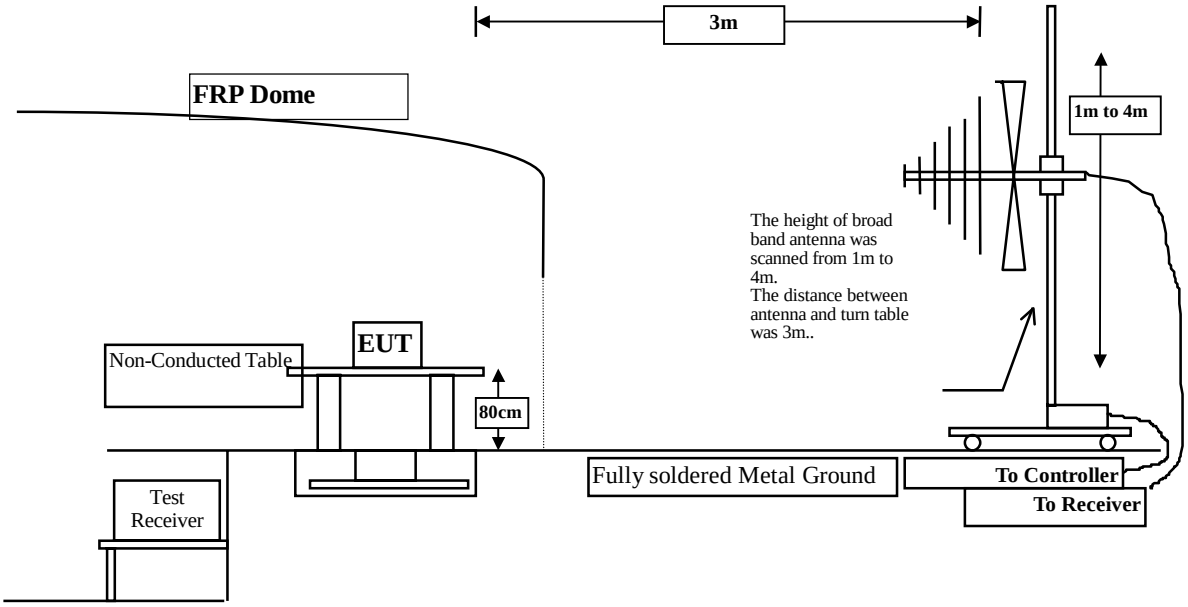
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☐Site # 1		Test Receiver	R & S	ESVS 10 / 834468/003	May, 2008
		Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2008
		Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2007
☐Site # 2		Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2008
		Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2008
		Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2007
		Horn Antenna	ETS	3115 / 0005-6160	Sep., 2007
		Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2008
☒Site # 3	X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

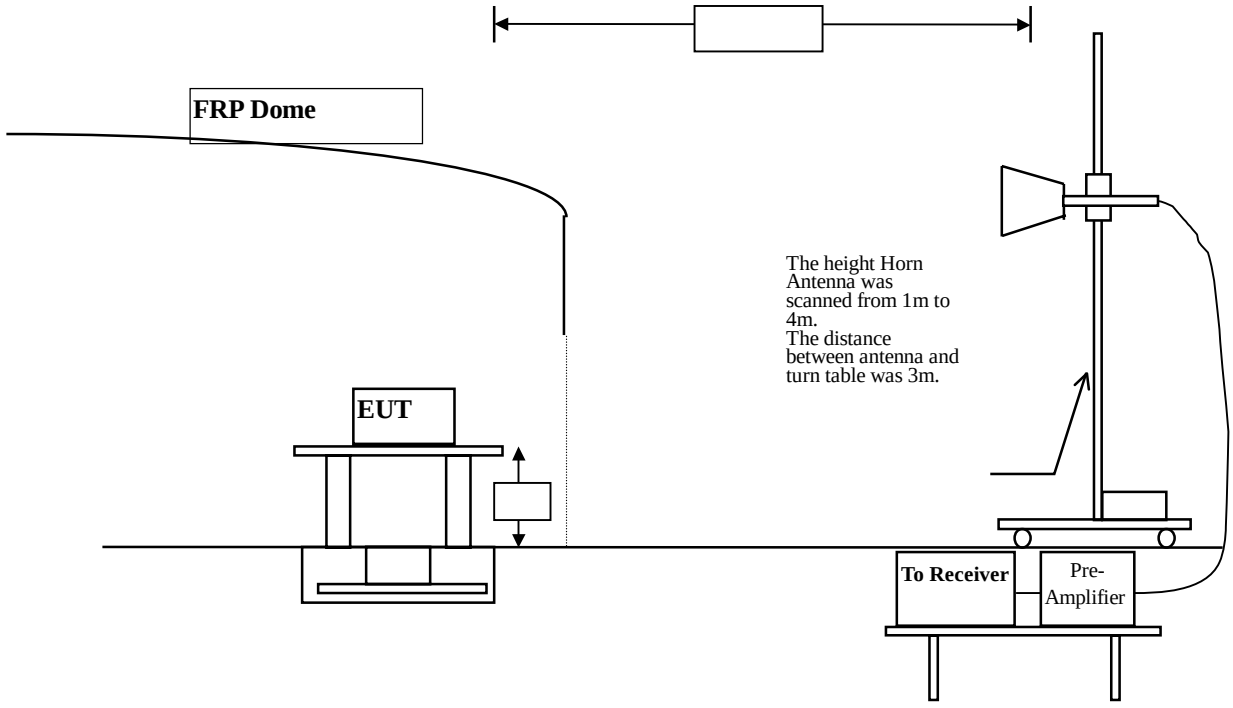
Note: 1. All equipments are calibrated every one year.
2. Test equipments marked by “X” are used to measure the final test results.

2.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



2.3. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

2.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.249 requirements.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2003 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.
The measurement is divided into the Preliminary Measurement and the Final Measurement.
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.
The worst radiated emission is measured on the Final Measurement.
The frequency range from is checked.

2.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

2.6. Test Result of Radiated Emission

Product : Eee Stick
Test Item : Fundamental Radiated Emission
Test Site : No.3OATS
Test Mode : Mode 1: Transmitter (2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 01					
2401.832	-2.319	88.100	85.781	-28.219	114.000
Average Detector					
2401.832	-2.319	86.280	83.961	-10.039	94.000
Vertical					
Peak Detector:					
Channel 01					
2401.832	-2.319	90.970	88.651	-25.349	114.000
Average Detector					
2401.832	-2.319	89.150	86.831	-7.169	94.000

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : Eee Stick
Test Item : Fundamental Radiated Emission
Test Site : No.3OATS
Test Mode : Mode 1: Transmitter (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 02					
2441.000	-2.128	89.030	86.901	-27.099	114.000
Average Detector					
2441.000	-2.128	87.910	85.781	-8.219	94.000
Vertical					
Peak Detector:					
Channel 02					
2441.000	-2.128	92.020	89.891	-24.109	114.000
Average Detector					
2441.000	-2.128	89.800	87.671	-6.329	94.000

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : Eee Stick
Test Item : Fundamental Radiated Emission
Test Site : No.3OATS
Test Mode : Mode 1: Transmitter (2478MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 03					
2477.864	-1.961	89.950	87.989	-26.011	114.000
Average Detector					
2477.864	-1.961	88.691	86.730	-7.270	94.000
Vertical					
Peak Detector:					
Channel 03					
2477.864	-1.961	93.020	91.059	-22.941	114.000
Average Detector					
2477.864	-1.961	89.960	87.999	-6.001	94.000

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : Eee Stick
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2402MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.663	49.960	53.623	-20.377	74.000
7206.000	9.357	41.920	51.276	-22.724	74.000
9608.000	11.842	39.030	50.872	-23.128	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	53.060	56.723	-17.277	74.000
7206.000	9.357	44.530	53.886	-20.114	74.000
9608.000	11.842	38.690	50.532	-23.468	74.000
Average Detector:					
4804.000	3.663	46.900	50.563	-3.437	54.000
7206.000	9.357	36.330	45.686	-8.314	54.000
9608.000	11.842	35.050	46.892	-7.108	54.000

Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:3KHz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Eee Stick
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2441 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.921	48.790	52.711	-21.289	74.000
7323.000	9.657	40.920	50.577	-23.423	74.000
9764.000	11.798	34.590	46.388	-27.612	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	51.650	55.571	-18.429	74.000
7323.000	9.657	40.880	50.537	-23.463	74.000
9764.000	11.798	36.450	48.248	-25.752	74.000
Average Detector:					
4882.000	3.921	46.320	50.241	-3.759	54.000
7323.000	9.657	35.790	45.447	-8.553	54.000
9764.000	11.798	33.890	45.688	-8.312	54.000

Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:3KHz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Eee Stick
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2478 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4956.000	4.182	49.020	53.202	-20.798	74.000
7434.000	9.939	42.640	52.579	-21.421	74.000
9912.000	11.853	35.710	47.563	-26.437	74.000
Average Detector:					
Vertical					
Peak Detector:					
4956.000	4.182	52.120	56.302	-17.698	74.000
7434.000	9.939	41.920	51.859	-22.141	74.000
9912.000	11.853	35.710	47.563	-26.437	74.000
Average Detector:					
4956.000	4.182	45.900	50.082	-3.918	54.000
7434.000	9.939	38.850	48.789	-5.211	54.000
9912.000	11.853	33.380	45.233	-8.767	54.000

Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:3KHz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Eee Stick
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2441 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
606.180	20.216	11.496	31.712	-14.288	46.000
778.840	21.384	12.603	33.987	-12.013	46.000
827.340	21.877	11.399	33.276	-12.724	46.000
891.360	22.177	15.171	37.348	-8.652	46.000
926.280	23.005	10.343	33.348	-12.652	46.000
967.020	23.439	10.478	33.917	-20.083	54.000
Vertical					
544.100	20.532	8.026	28.558	-17.442	46.000
689.600	20.441	7.863	28.304	-17.696	46.000
773.020	22.593	10.881	33.474	-12.526	46.000
804.060	21.743	11.017	32.760	-13.240	46.000
930.160	24.128	9.658	33.786	-12.214	46.000
967.020	22.939	10.184	33.123	-20.877	54.000

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

3. Band Edge

3.1. Test Equipment

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

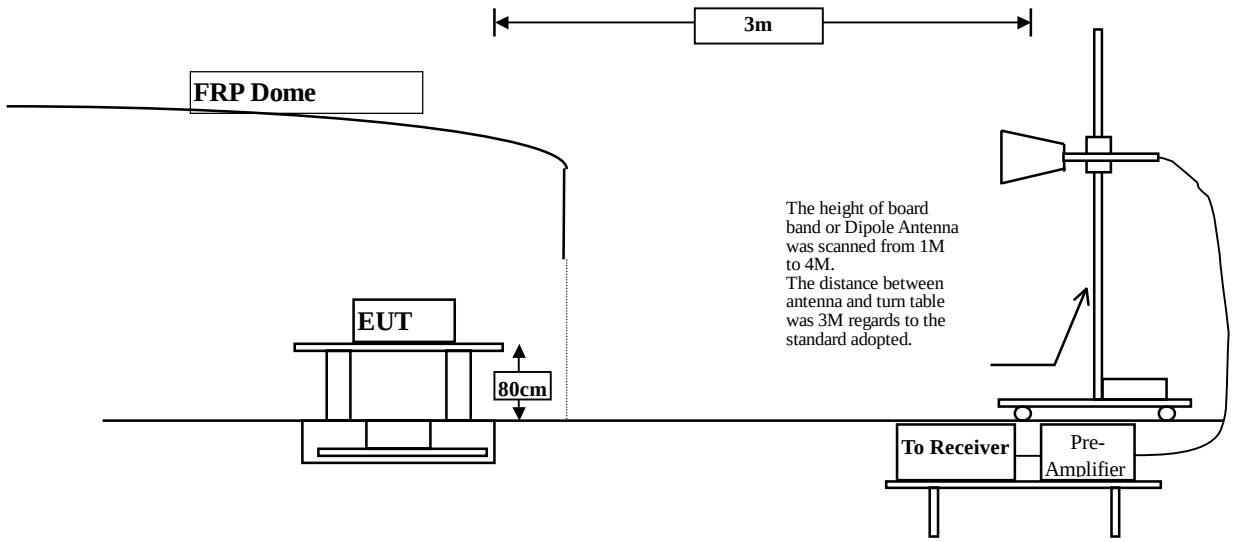
Test Site: Site3

Note: 1. All equipments are calibrated every one year.

2. The test equipments marked by “X” are used to measure the final test results.

3.2. Test Setup

RF Radiated Measurement:



3.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to
ANSI C63.4: 2003 on radiated measurement.
The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

3.5. Uncertainty

Conducted is ± 1.27 dB
Radiated is ± 3.9 dB

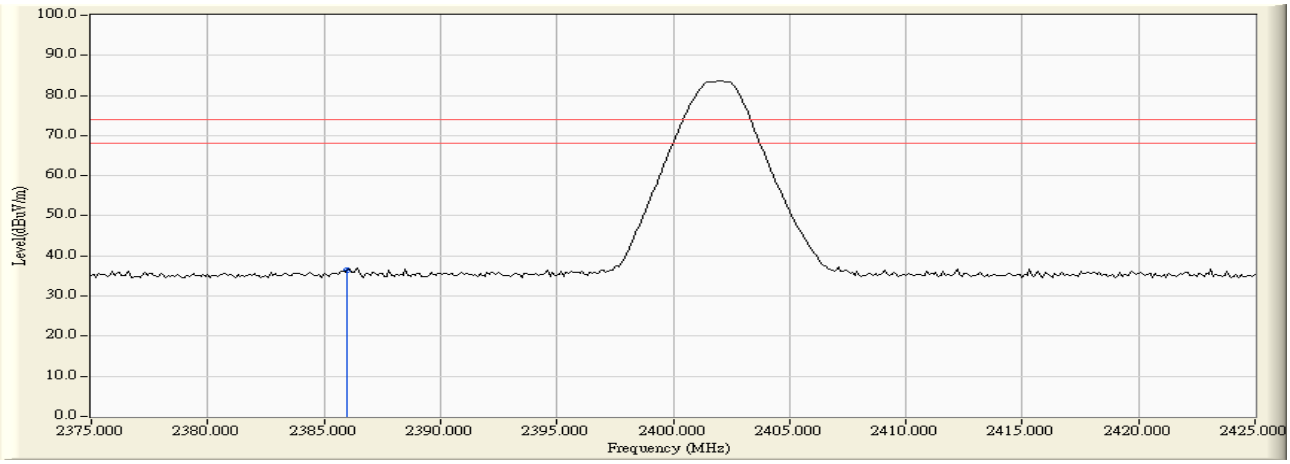
3.6. Test Result of Band Edge

Product : Eee Stick
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Horizontal):

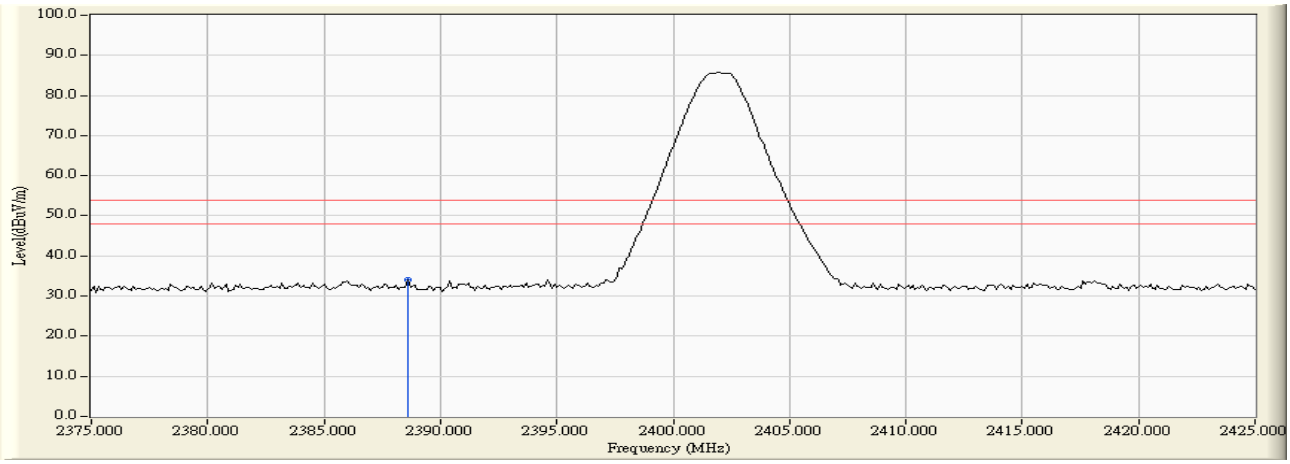
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2386.000	-2.397	38.939	36.542	74.00	54.00	Pass
01(Average)	2388.600	-2.384	36.422	34.038	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Figure Channel 01: Horizontal (Average)



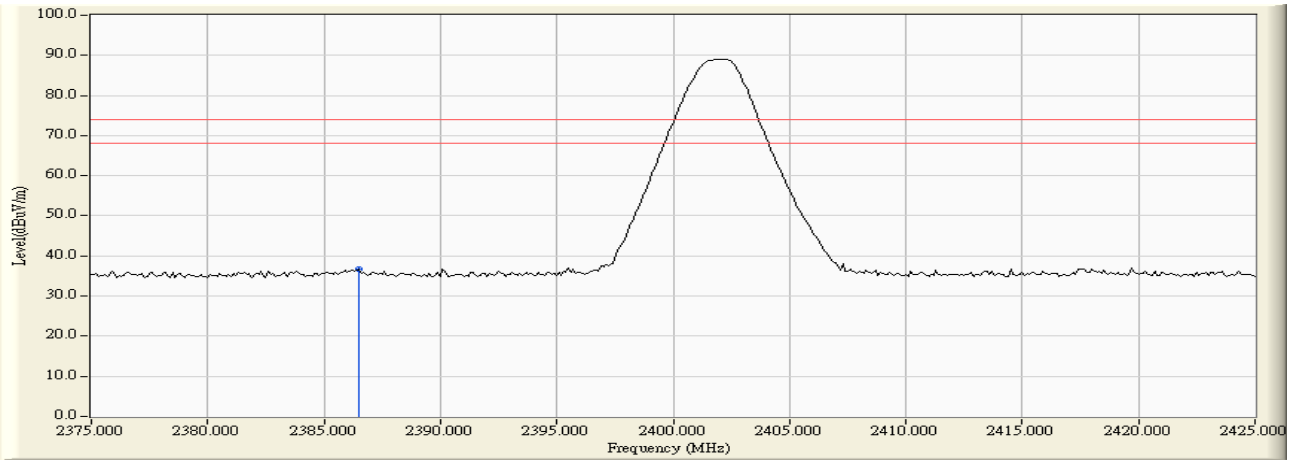
Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Eee Stick
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Vertical):

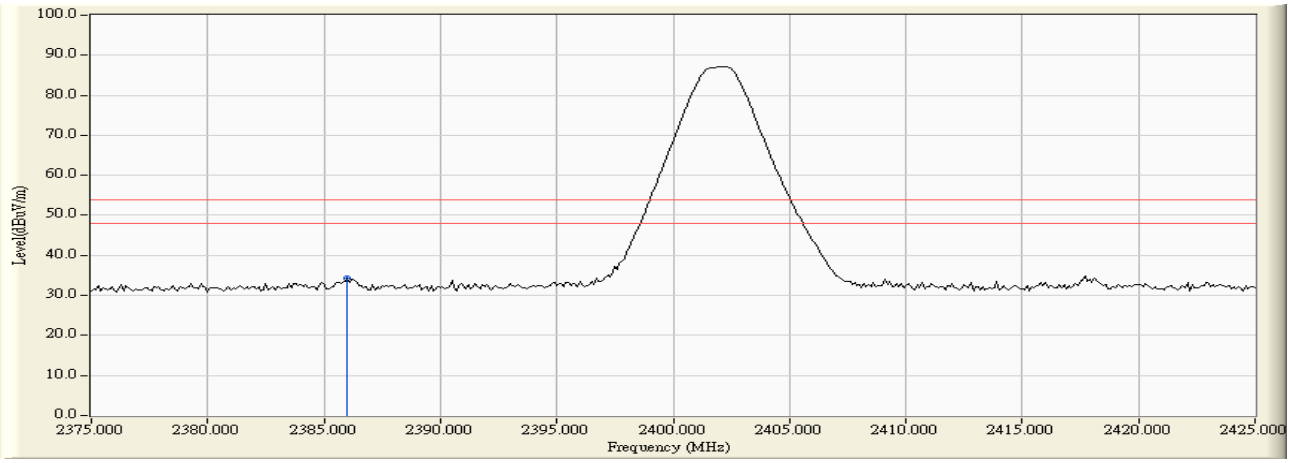
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2386.500	-2.394	39.165	36.771	74.00	54.00	Pass
01(Average)	2386.000	-2.397	36.825	34.428	74.00	54.00	Pass

Figure Channel 01: Vertical (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Figure Channel 01: Vertical (Average)



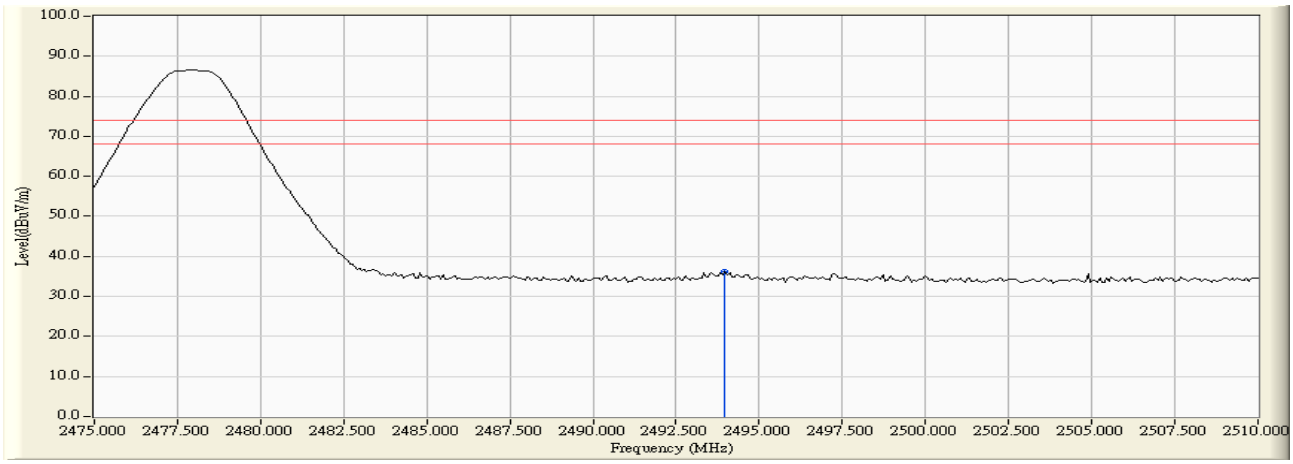
Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Eee Stick
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Horizontal):

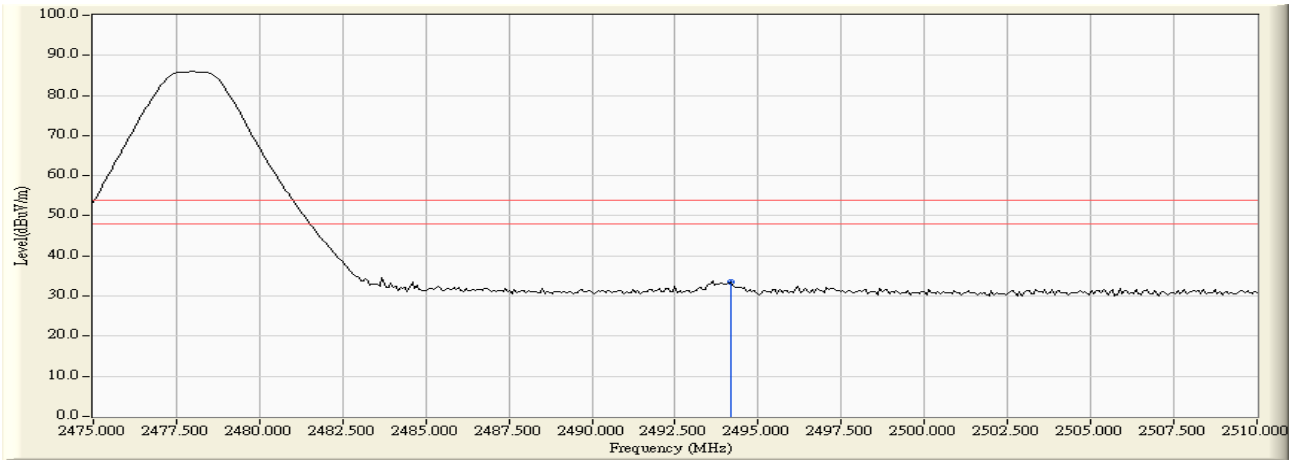
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
03(Peak)	2493.970	-1.904	38.222	36.318	74.00	54.00	Pass
03(Average)	2494.180	-1.904	35.462	33.558	74.00	54.00	Pass

Figure Channel 03: Horizontal (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Figure Channel 03: Horizontal (Average)



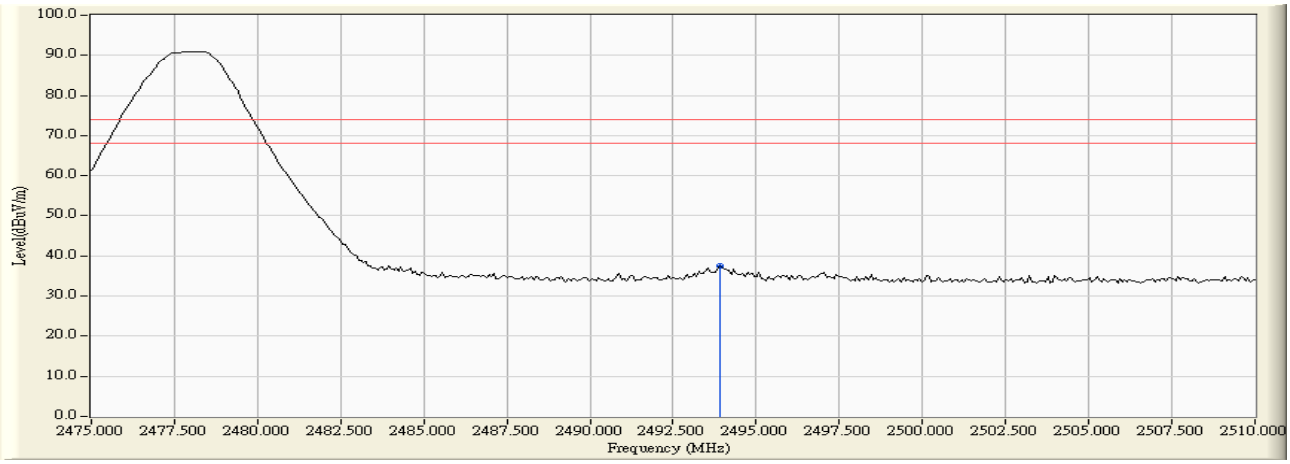
Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Eee Stick
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

RF Radiated Measurement (Vertical):

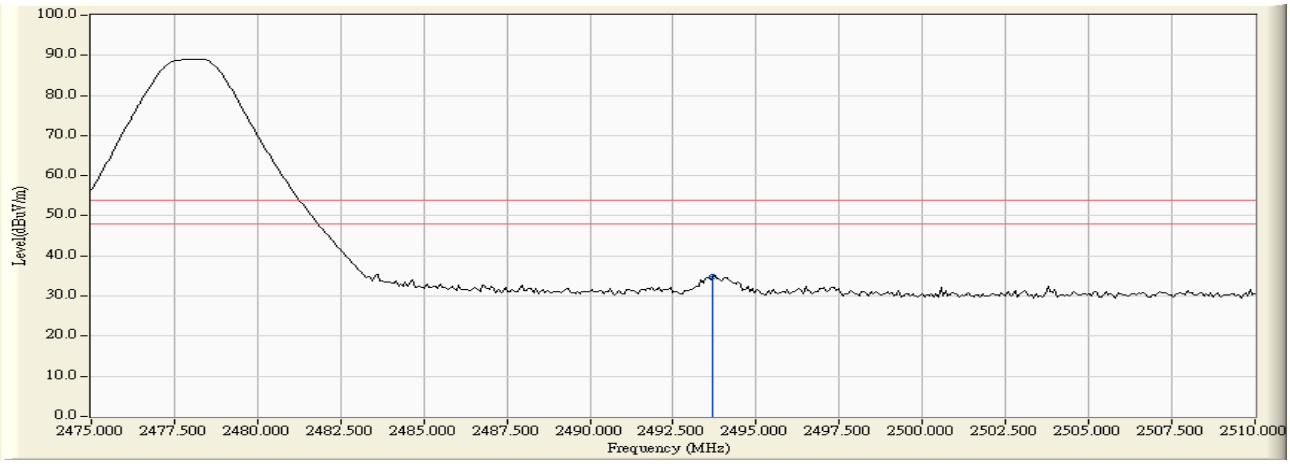
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
03(Peak)	2493.900	-1.905	39.307	37.402	74.00	54.00	Pass
03(Average)	2493.690	-1.905	36.831	34.926	74.00	54.00	Pass

Figure Channel 03: Vertical (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Figure Channel 03: Vertical (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.